Issues related to non-point source loads in mining TMDL's.

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Introduction

- Non-point source (NPS) loads are legally defined as those pollutant loads from discharges that do not have a NPDES permit.

- NPS loads can make up a significant portion of a watershed's total load.

- For conventional (non-mining) pollutants, NPS loads are normally associated with surface runoff.

Conventional NPS Loads

- For pollutants associated with surface runoff, the pollutant concentration of the runoff is a simple function of the discharge rate.

- This allows the modeler to derive a relatively simple load function based upon the watershed's precipitation rate and land use classification.

Mining NPS Loads

- Because of the legal definition, acidic mine drainage (AMD) from abandoned mines must be classified as a non-point source load when calculating a watershed's TMDL.

- Abandoned mine drainage accounts for the majority of the total AMD load present in affected West Virginia watersheds.

Calculating Mining NPS Loads

- The science of predicting the quality and quantity of drainage from surface and underground mines is still in its infancy.

- Mine drainage quality and quantity should be viewed as random variables with little correlation to precipitation.

- Therefore, mining TMDL *models* should represent abandoned mine drainage as *quasi-point source* (QPS) loads.

Data Requirements

- Because of the physical characteristics of mine discharge require that abandoned mine drainage sites be modeled as QPS loads, data from these sites is required.

- The quality of the watershed model is directly proportional to the amount of QPS data available.

- Total acidity, total alkalinity, pH and metal concentration data should be collected.

Recommendations

- The science of predicting the temporal evolution in the quality of drainage from surface and underground mines is in need of maturation.

- The quality and quantity of drainage from abandoned mines.

Conclusions

- NPS loads from abandoned mines normally represent the majority of the total AMD load within watersheds.

- Unlike conventional pollutants, these NPS loads need to be represented in water quality models as QPS loads.

- The additional data requirements add to the cost of performing a proper mining TMDL study.

- Some of the additional data requirements may be offset with advances in the science of AMD.